



Chillcottomyia Saigusa new to Europe (Diptera, Empidoidea, Hybotidae)

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Abstract

A new species of *Chillcottomyia* Saigusa, 1986 is described from Portugal, *C. ovaticornis* **sp. nov.** This species represents the first record of *Chillcottomyia* from Europe.

Key Words

Dance flies, Hybotinae, new genus record, new species

Introduction

The Hybotidae comprises a group of flies with approximately 2,000 known species, generally small to minute in size (1.0–10.0 mm), found on all continents except for Antarctica (Yang et al. 2007). Most adults are predatory, although a few genera of Oedaleinae are known to visit flowers. Among predatory taxa, some groups, such as Bicellariinae and Hybotinae, include species specialized in capturing prey in flight, while others (e.g. Tachydromiinae) pursue prey across surfaces such as leaves and tree bark. For the majority of Hybotidae species, the larvae remain unknown; however, they are presumed to be exclusively predatory (Chvála 1983).

The diagnostic criteria of the Hybotinae (one of the seven subfamilies of the Hybotidae) include a short, forward-directed proboscis; holoptic females in most genera; the presence of a discal medial (dm) cell; an unbranched M_{1+2} vein; and cell cua (anal cell) is as long as or longer than the basal medial (bm) cell (Sinclair and Cumming 2006; Wahlberg and Johanson 2018). This sub-

family includes 13 genera, one of which is *Chillcottomyia* Saigusa, a *Stenoproctus*-like genus characterized by slender hind femora and pubescent eyes (Fig. 1). *Chillcottomyia* has long been known from the eastern Palearctic, Oriental and Afrotropical regions (Saigusa 1986; Sinclair and Cumming 2017). More recently, a single female was recorded in Morocco, representing the first known occurrence of the genus in the Mediterranean region (Zouhair and Kettani 2022). Nothing is known about the biology of the genus, but adults have been found by sweeping riparian vegetation around streams and seepages (Fig. 2).

Here, we report the presence of *Chillcottomyia* in Europe, based on the discovery of a previously undescribed species from northern Portugal.

Material and methods

This study is based on material deposited in the Canadian National Collection of Insects, Ottawa, Canada. Label data for primary types are cited from the top downward,

with the data from each label in quotation marks. Labels are cited in full, with original spelling, punctuation, and date, and label lines are delimited by a slash (/). The repository of each type is given in parentheses. Secondary type data are abridged and listed alphabetically.

Terms used for adult structures follow those of Cumming and Wood (2017). Pinned specimens were photographed using Leica Application Suite X (LASX) with a Leica M205C microscope and Leica DMC5400 camera. Male terminalia were macerated in 85% lactic acid heated on a hot plate. Terminalia were subsequently examined in glycerin on a depression slide and illustrated.

Taxonomy

Chillcottomyia Saigusa

Chillcottomyia Saigusa, 1986: 97. Type species, *C. septentrionalis* Saigusa (original designation).

Recognition. The genus *Chillcottomyia* is distinguished from other genera of Hybotinae by the eyes with dense ommatrichia, wing with broad anal angle, cell cua short, two-thirds length of cell bm and closed by straight vein CuA, cell dm short and broad, and hind femur narrow. The genus can be identified by using the identification key to the genera of Hybotidae in Sinclair and Cumming (2017).

Distribution. Species of this genus have been described from China, Japan, Nepal and South Africa, with undescribed species known from Indonesia (West Java), Madagascar, Malaysia, Morocco, Philippines, Taiwan and Vietnam (Saigusa 1986; Sinclair and Cumming 2017; Zouhair and Kettani 2022; Sinclair unpubl. data). This is the first report of the genus from Europe.

Chillcottomyia ovaticornis sp. nov.

<https://zoobank.org/D66038B1-EB3A-4AB9-8B22-11DF5A327944>

Figs 2–10

Type material. *Holotype* • ♂; “PORTUGAL: Porto, Valongo/ 41°09'33.4"N, 8°29'05.6"W/ 30.viii.2018, R. Andrade leg./ CNC2175714”; “HOLOTYPE/ *Chillcottomyia ovaticornis*/ Sinclair, Andrade & Gonçalves [red label]” (CNC). *Paratype*: PORTUGAL • 1 ♀; same data as for holotype; Jul. 13 2023; CNC2175715.

Etymology. The species name is derived from the Latin *ovatus* (egg-shaped) and *cornu* (horn), in reference to the ovate-shaped postpedicel.

Diagnosis. This small species is distinguished from all other species of the genus, except an un-named species from Morocco by the ovate-shaped postpedicel. The male terminalia is similar to the type species, characterized by left epandrial lamella with subapical dorsal row of stout, stiff setae; right epandrial lamella with outer row of long, stiff setae and inner row of shorter, stout, stiff setae. Male

with single, very long anterodorsal seta on mid tibia, female with pair of anterodorsal setae.

Description. Wing length 3.0–3.5 mm. **Male.** Eyes orange-brown, not flattened dorsally (Fig. 3, as in Fig. 5); upper facets paler and twice as large as darker lower facets, separated by line (Figs 5, 6). Occiput dark brown with grey pruinescence; occipital setae pale. Ocellar triangle elevated, pruinulent, bearing pair of long ocellar setae; distance between posterior ocelli subequal to width of ocellus. Antenna with scape and pedicel brown; postpedicel brown, ovate (as in Fig. 5), slightly projecting dorsally, $2 \times$ as long as basal width; arista-like stylus dark, more than $3 \times$ longer than postpedicel. Proboscis and palpus dark brown.

Scutum strongly arched, dark brown, with pruinescence divided by 4 shiny vittae separating broad central pruinulent band along acrostichals from narrower pruinulent band along dorsocentrals and outer shiny vitta on outer margin of dorsocentral band (as in Fig. 6); postpronotum and postalar callus pale brown; pleura uniformly brown with pruinescence. Chaetotaxy: acrostichals in two biserial rows, thin and short; dorsocentrals uniserial with 1 very long, strong prescutellar dorsocentral seta, shorter than apical scutellum; postpronotum with several long setulae; 1 notopleural seta; 1 postalar seta; 6–7 pairs of scutellar setae, apical pair longest.

Legs yellowish brown, including coxae; tarsomeres 3–5 brown (Fig. 3). Fore femur with anteroventral and posteroventral row of slender setae, latter row longer. Fore tibia broader than mid tibia, with 1 preapical anterodorsal seta, length twice width of tibia and similar posteroventral seta; numerous long, erect slightly shorter dorsal setae; posterior face of long fine setae, subequal to width of tibia; apical third of anterior face with matted setulae. Fore tarsomere slender; tarsomere 1 with dense ventral setae, nearly as long as width of tarsomere. Mid femur with anteroventral and posteroventral row of slender setae, shorter than width of femur. Mid tibia straight; 1 anterodorsal seta on basal half, one-third length of tibia; apex with circlet of long, slender setae, including pair of ventral setae; anterior face with strong setae. Mid tarsus similar to fore tarsus. Hind femur with long posterior and posterodorsal setae on basal half, longer than width of femur; apical half with long anteroventral setae, twice as long as width of femur; apex with circlet of long, slender preapical setae. Hind tibia slightly clavate; 1 long anterodorsal seta on basal half; numerous, long anterodorsal, posterodorsal and anteroventral setae; apex with long anterodorsal and posterodorsal preapical setae; apical third with dense brush of posterior setae. Hind tarsomere 1 slightly broader than remaining tarsomeres; with dense brush of posterior setae, similar to apical third of tibia. Hind tarsomeres 2 and 3 with posterior brush of setae similar to tarsomere 1.

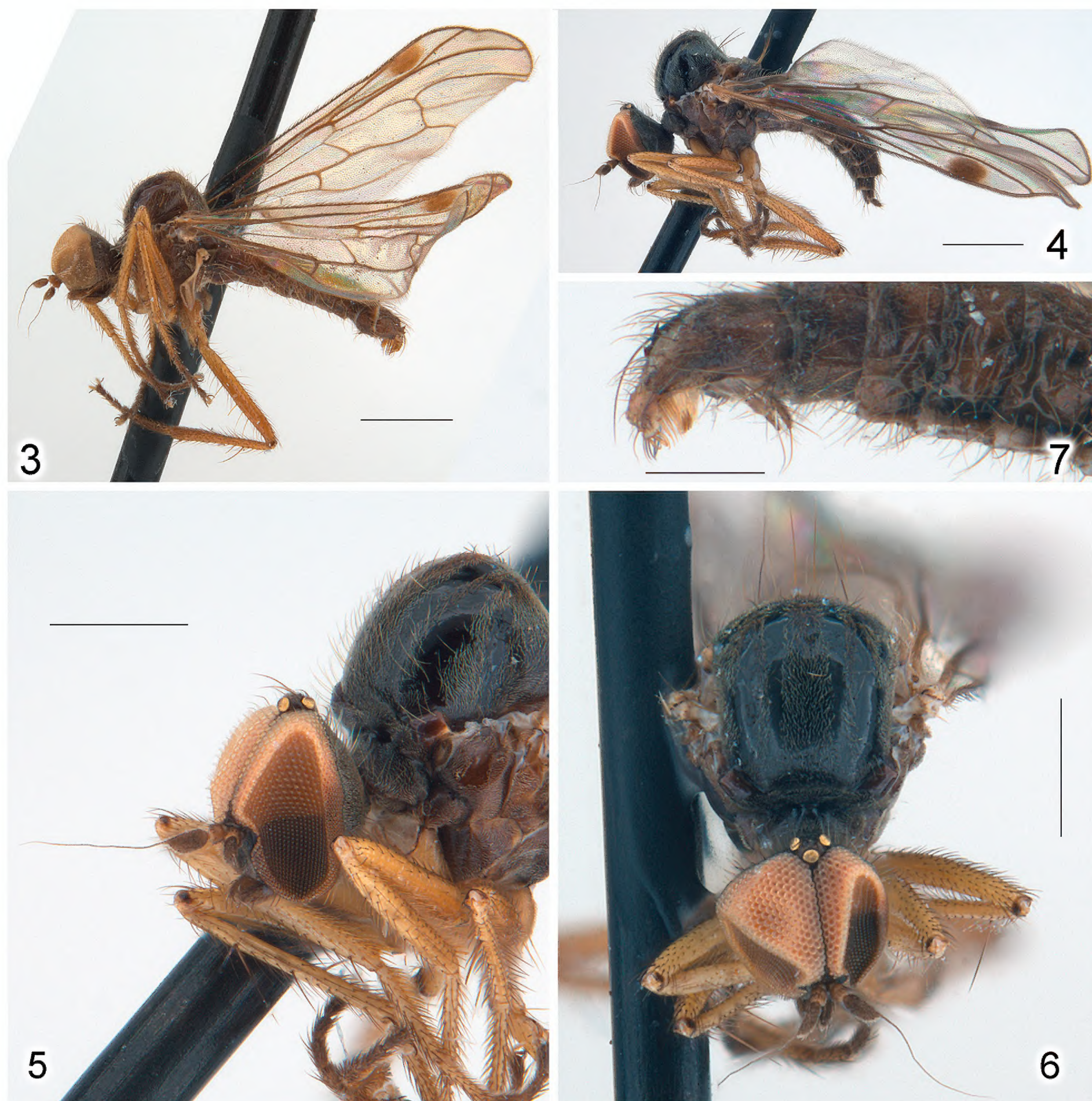
Wing slightly infusate; pterostigma dark brown, oval; vein R_{2+3} slightly arched beneath pterostigma; cell dm only slightly broader apically, crossvein dm-m $1.5 \times$ as long as length of apical section of M_4 . Halter pale brown.



Figures 1, 2. 1. Female of *Chillcottomyia ovaticornis* sp. nov.; 2. Habitat of female paratype.

Abdomen brown, subshiny, clothed in slender pale setae (Fig. 7); tergite 6 without denser and stouter lateral setae; tergite 7 with left lateral setae more than twice as long as right lateral setae; sternites 7–8 with left lateral setae longer than right lateral setae; tergite 8 asymmetrical, divided into two separated sclerites: subtriangular sclerite,

tapered to left, produced into slender, sclerotized projection and small triangular sclerite beneath projection, with 2 slender posterior setae; sternite 8 asymmetrical, broadly rectangular, left margin tapered to smaller sclerite of tergite 8. Terminalia (Figs 8–10): Epandrium asymmetrical, left lamella longer and slenderer than shorter and rounded



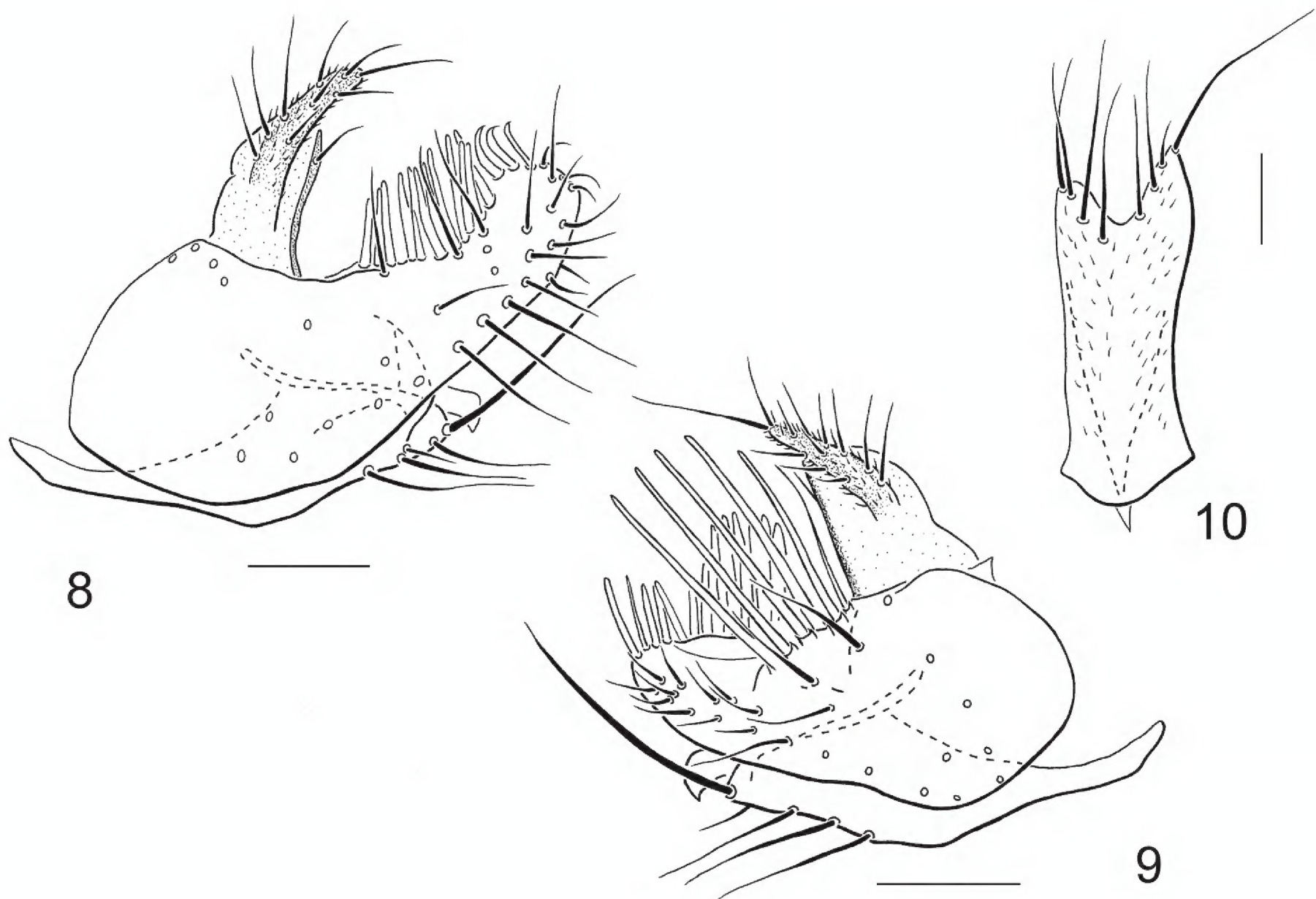
Figures 3–7. *Chillcottomyia ovaticornis* sp. nov. **3.** Male holotype, lateral habitus (prior to genitalia dissection); **4.** Female paratype, lateral habitus; **5.** Female paratype, head and thorax, oblique lateral view; **6.** Female paratype, head and thorax, dorsal view; **7.** Male holotype (prior to genitalia dissection), abdomen and terminalia, lateral view. Scale bars: 0.75 mm (**3, 4**); 0.5 mm (**5, 6**); 0.25 mm (**7**).

right lamella; right surstylus delimited along inner margin of lamella. Apex of left epandrial lamella arched dorsally with 3 arched, thickened subapical setae (Fig. 8); inner margin with row of some 10 thickened, stiff setae, slightly longer than width of lamella. Right epandrial lamella triangular inflated laterally with surstylus differentiated along inner margin (Fig. 9); outer face with row of 6 thickened setae, longer than width of lamella, and longer than similar setae on inner surstylus. Right surstylus subtriangular with apical row of some 8 thickened setae and clustered row of 6 longer thickened setae. Hypandrium asymmetrical (Fig. 10); posterior margin deeply bilobate, with right lobe longer than left lobe; each lobe with sharp inner ridge ex-

tending to apex; right lobe triangular, with line of 3 strong setae and 1 weaker, thin seta; left lobe rounded apically with line of 4 setae. Postgonite flange-like, flattened along inner face with row of subapical setulae. Phallus with pair of ventrally directed hooked processes. Cerci symmetrical, simple, pilose with slender setae; apex without cluster of setae. Hypoproct with pair of short, subapical setae, continuous with slender, elongate subepandrial sclerite.

Female. Similar to male in size (Figs 4–6); leg chaetotaxy longer and denser; pair of very long anterodorsal setae on mid tibia.

Distribution. This species was collected near the village of Couce (Valongo), in northern Portugal. The fe-



Figures 8–10. Male terminalia of *Chillcottomyia ovaticornis* sp. nov., holotype. **8.** Left epandrial lamella; **9.** Right epandrial lamella; **10.** Hypandrium, ventral view. Scale bars: 0.1 mm.

male was collected by sweeping vegetation along a small trickle of water near a small river (Ferreira River) (Fig. 2). The surrounding slopes are predominantly covered with eucalyptus stands, while the riverbanks feature patches of native trees, including oaks (*Quercus orocantabrica* and *Quercus suber*), willows (mainly *Salix atrocinerea*), ash trees (*Fraxinus angustifolia*), and others.

Remarks. An undescribed species from Morocco (Zouhair and Kettani 2022) is likely conspecific based on the ovate-shaped postpedicel. All other known species of *Chillcottomyia* are characterized by a conical-shaped postpedicel. The arista-like stylus is supra-terminal in the Portugal specimens but is stated as terminal in Zouhair and Kettani (2022). Confirmation of the identity of the Moroccan species must await discovery of male specimens and comparison of the male terminalia. The row of thickened setae on the left epandrial lamella is very similar to *C. septentrionalis* Saigusa (see Saigusa 1986, fig. 2), which characterizes a species group within this genus (Sinclair unpubl. data).

The shape of the postpedicel is rather similar to the genus *Ocydromia* Meigen, but as stated in the key to genera of Afrotropical Hybotidae (Sinclair and Cumming 2017), the wing clearly distinguishes the two genera: pterostigma rounded and dark (elongate and faint in *Ocydromia*), crossvein dm-m straight (curved in *Ocydromia*) and R_{2+3} arched below pterostigma (vein straight in *Ocydromia*).

Discussion

For a long time, the only representatives of the Hybotinae in Europe were the genera *Hybos* Meigen, *Syndyas* Loew and *Syneches* Walker, all of which are known to occur on the Iberian Peninsula (Ventura and Báez 2002). Chvála and Stark (1997) reported the discovery of *Lamachella germanica* in Germany, a new species reared from a rotting tree trunk of *Tilia* (Malvaceae), marking the first European record of the genus *Lamachella* Melander. A second species has been reported from Corsica but remained un-named (Grootaert and Shamshev 2003).

The Hybotidae fauna of Portugal remains poorly known, although recent efforts have led to additions to the national species list and the description of new taxa (e.g. Grootaert et al. 2010; Gonçalves et al. 2021; Kanavalová et al. 2021). Within Hybotinae, only the genus *Hybos*, with two species, had previously been recorded in Portugal (Shamshev et al. 2015).

The discovery of a species of *Chillcottomyia* in Portugal adds a fifth genus of Hybotinae to the European fauna. Alongside the recent Moroccan record, this finding demonstrates that the genus has a wider distribution than previously recognized (see Sinclair and Cumming 2017). Additional sampling efforts in less studied areas of the Western Palearctic may reveal additional species of this poorly known genus, providing hints into their phylogeographic and phylogenetic relationships.

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References

- Chvála M (1983) The Empidoidea (Diptera) of Fennoscandia and Denmark. II. General Part. The families Hybotidae, Atelestidae and Microphoridae. *Fauna Entomologica Scandinavica* 12: 1–279.
- Chvála M, Stark A (1997) A new species of the Afrotropical genus *La-machella* (Diptera: Hybotidae), found in temperate Europe. *Acta Universitatis Carolinae Biologica* 41: 323–327.
- Cumming JM, Wood DM (2017) [Chapter] 3. Adult morphology and terminology. In: Kirk-Spriggs AH, Sinclair BJ (Eds) *Manual of Afrotropical Diptera*. Volume 1. Introductory chapters and keys to Diptera families. Suricata 4. South African National Biodiversity Institute, Pretoria, 89–133.
- Gonçalves AR, Grootaert P, Andrade R, Paulo OS, Mengual X (2021) Revision of the morphology, phylogenetic relationships, behaviour and diversity of the Iberian and Italian ant-like *Tachydromia* Meigen, 1803 (Diptera: Hybotidae). *European Journal of Taxonomy* 732: 1–56. <https://doi.org/10.5852/ejt.2021.732.1213>
- Grootaert P, Shamshev I (2003) A note on the remarkable empidid fauna (Diptera Empididae Hybotidae Atelestidae) of Corsica. *Bulletin van de Koninklijke Belgische Vereniging voor Entomologie* 139: 243–252.
- Grootaert P, Shamshev I, Andrade R (2010) Notes on *Chersodromia* from Portugal, Spain and France with the description of a new brachypterous species (Diptera, Hybotidae, Tachydromiinae). *Bulletin van de Koninklijke Belgische Vereniging voor Entomologie* 146: 203–206.
- Kanavalová L, Grootaert P, Kubík Š, Barták M (2021) Four new West Palearctic species and new distributional records of Hybotidae (Diptera). *ZooKeys* 1019: 141–162. <https://doi.org/10.3897/zookeys.1019.61496>
- Saigusa T (1986) New genera of Empididae (Diptera) from eastern Asia. *Sieboldia* 5(1): 97–118.
- Shamshev I, Grootaert P, Kustov S (2015) New data on the genus *Hybos* Meigen (Diptera: Hybotidae) from the Palearctic Region. *Zootaxa* 3936(4): 451–484. <https://doi.org/10.11646/zootaxa.3936.4.1>
- Sinclair BJ, Cumming JM (2017) [Chapter] 52. Hybotidae (Hybotid dance flies). In: Kirk-Spriggs AH, Sinclair BJ (Eds) *Manual of Afrotropical Diptera*. Volume 2. Nematocerous Diptera and lower Brachycera. Suricata 5. South African National Biodiversity Institute, Pretoria, 1237–1249.
- Ventura D, Báez M (2002) Hybotidae. In: Carles-Tolrá Hjorth-Andersen M (Ed.) *Catálogo de los Diptera de España, Portugal y Andorra* (Insecta). *Monografías Sociedad Entomológica Aragonesa* 8: 103–105.
- Wahlberg E, Johanson KA (2018) Molecular phylogenetics reveals novel relationships within Empidoidea (Diptera). *Systematic Entomology* 43(4): 619–636. <https://doi.org/10.1111/syen.12297>
- Yang D, Zhang K, Yao G, Zhang J (2007) *World Catalog of Empididae* (Insecta: Diptera). China Agricultural University Press, Beijing, 599 pp.
- Zouhair L, Kettani K (2022) Moroccan Hybotinae (Diptera: Hybotinae): first record of the subfamily and rare genera with an emphasis on their distribution. *Zootaxa* 5196(2): 211–222. <https://doi.org/10.11646/zootaxa.5196.2.3>